

What Is Claimed Is:

1. A sensor element (10), in particular for detecting a physical property of a measuring gas, preferably for determining the oxygen partial pressure in an exhaust gas of an internal combustion engine, having at least one electrochemical measuring cell, which comprises a first electrode (31, 131) and a second electrode (32, 132), which are electrically connected by a solid electrolyte (21, 121, 122, 125), the second electrode (32, 132) being situated in a gas chamber (41, 141), which is connected to the measuring gas located outside the sensor element (10, 110) via a first element (61, 161) having a catalytically active material and a second diffusion-limiting element (62, 162),
wherein the first element (61, 161) has a length of at least 1 mm in the diffusion direction of the measuring gas.
2. The sensor element as recited in Claim 1,
wherein the first element (61, 161) and/or the second element (62, 162) has/have at least regionally a porous design.
3. The sensor element as recited in Claim 1 or 2,
wherein the first element (61, 161) has a length in the range from 1.5 mm to 20 mm, in particular in the range from 2 mm to 5 mm, in the diffusion direction of the measuring gas.
4. The sensor element as recited in Claim 2 or 3,
wherein the proportion of pores in the first element (61, 161) is at least twice as large as the proportion of pores in the second element (62, 162).
5. The sensor element as recited in one of the preceding claims,
wherein the volume of the first element (61, 161) filled with a porous material is in the range from 1 mm³ to 20 mm³, in particular in the range from 2 mm³ to 10 mm³.
6. The sensor element as recited in one of the preceding claims,
wherein the diffusion cross section of the first element (61, 161) is at least twice as large as the diffusion cross section of the second element (62, 162).

7. The sensor element as recited in one of the preceding claims, wherein the first element (61, 161) is a channel filled with a porous material, and the height of the first element (61, 161) is in the range from 0.1 mm to 0.5 mm, in particular 0.3 mm, and/or the width of the first element (61, 161) is in the range from 1 mm to 4 mm, in particular 3 mm.
8. The sensor element as recited in one of the preceding claims, wherein the second element (62, 162) is situated between the first element (61, 161) and the gas chamber (41, 141).
9. The sensor element as recited in one of the preceding claims, wherein a constriction (71), whose diffusion cross section is smaller than the diffusion cross section of the first element (61, 161), is provided on the side of the first element (61, 161) facing toward the measuring gas located outside the sensor element (10).
10. The sensor element as recited in Claim 9, wherein the diffusion cross section of the constriction (71) is 10% to 80%, in particular 20% to 40%, of the diffusion cross section of the first element (61, 161), and/or the length of the constriction (71) in the diffusion direction is 10% to 100% of the length of the first element (61, 161).
11. The sensor element as recited in Claim 9 or 10, wherein a porous material is provided in the area of the constriction (71), whose mean pore diameters is in the range from 5% to 20% of the largest cross section of the constriction (71).
12. The sensor element as recited in one of the preceding claims, wherein the first element (61, 161) and/or the second element (62, 162) is/are at least regionally provided in the layer plane of the measuring gas chamber (41, 141).